Amendments to the Claims:

This listing of Claims will replace all prior versions, and listings, of claims in the application:

1-32. (Cancelled)

33. (Currently Amended) A wireless relay based network, comprising:

a first node;

at least one relay station; and

a second node;

wherein said first node communicates with said second node via said at least one relay station, wherein each relay station is operative to:

receive a digital communication from said first node;

compute a plurality of reliability values for a plurality of symbols in the received digital communication, where each reliability value indicates how likely the corresponding symbol is a binary 0 or a binary 1; and,

transmit a digital communication which corresponds to the received digital communication but also ~~that~~ has the computed reliability values embedded therein to said second node.

34. (Previously Presented) The wireless relay based network of Claim 33, wherein each relay station performs the computing operation using a maximum a posteriori (MAP) filter that computes reliability values for code symbols based on a code structure of the received digital communication.

35. (Previously Presented) The wireless relay based network of Claim 34, wherein each MAP filter also filters the received digital communication and redistributes noise to unreliable parts in the transmitted digital communication.

36. (Previously Presented) The wireless relay based network of Claim 33, wherein each relay station performs the computing operation using a soft output channel decoder that computes reliability values for information symbols based on a code structure of the received digital communication.

37. (Previously Presented) The wireless relay based network of Claim 36, wherein said soft output channel decoder employs:

a maximum a posteriori (MAP) algorithm;

a soft output Viterbi algorithm (SOVA);

a Log-MAP algorithm; or.

a Max-LOG-MAP algorithm.

38. (Previously Presented) The wireless relay based network of Claim 33, wherein the computed reliability values are embedded in the transmitted digital communication such that high reliability symbols are transmitted with higher power and low reliability symbols are transmitted with lower power to said second node.

39. (Previously Presented) The wireless relay based network of Claim 33, wherein the computed reliability values are embedded in the transmitted digital communication in a manner where the reliability symbols are used to modulate an amplitude of the digital communication transmitted to said second node.

40. (Previously Presented) The wireless relay based network of Claim 33, wherein the computed reliability values are embedded in the transmitted digital communication in a manner where the reliability symbols are used to modulate a phase of the digital communication transmitted to said second node.

41. (Previously Presented) The wireless relay based network of Claim 33, wherein the computed reliability values are embedded in the transmitted digital

communication in a manner where the reliability symbols are used to vary a bandwidth of the digital communication transmitted to said second node.

42. (Previously Presented) The wireless relay based network of Claim 33, wherein the computed reliability values are embedded in the transmitted digital communication in a manner where the reliability symbols are used to vary a signal time occupation of the digital communication transmitted to said second node.

43. (Previously Presented) The wireless relay based network of Claim 33, wherein the computed reliability values are embedded in the transmitted digital communication in a manner where the reliability symbols are used to vary a signal constellation size of the digital communication transmitted to said second node.

44. (Previously Presented) The wireless relay based network of Claim 33, wherein said first node is:

a base station;

a mobile station; or.

a relay station.

45. (Previously Presented) The wireless relay based network of Claim 33, wherein said second node is:

a base station;

a mobile station; or.

a relay station.

46. (Previously Presented) The wireless relay based network of Claim 33, wherein each relay station is:

a base station;

a mobile station; or.

a stand alone relay station.

47. (Previously Presented) The wireless relay based network of Claim 33, wherein said received digital communication is:

an uplink received digital communication;

a downlink received digital communication;

a base station peer-to-peer received digital communication; or.

a mobile station peer-to-peer received digital communication.

48. (Previously Presented) The wireless relay based network of Claim 33, wherein said transmitted digital communication is:

an uplink transmitted digital communication;

a downlink transmitted digital communication;

a base station peer-to-peer transmitted digital communication; or.

a mobile station peer-to-peer transmitted digital communication.

49. (Previously Presented) The wireless relay based network of Claim 33, wherein when multiple relay stations each transmit the digital communication then said second node combines the transmitted digital communications.

50. (Previously Presented) The wireless relay based network of Claim 33, wherein when one relay station transmits multiple digital communications at different times then said second node combines the transmitted digital communications.

51. (Previously Presented) The wireless relay based network of Claim 33, wherein when one relay station knows a channel response of a link between that relay station and said second node then that relay station is able to construct a transmitted digital communication which is coherently combined at said second node with a similar transmitted digital communication received from another relay station.

52. (Currently Amended) A relay station operative to provide communications between a first node and a second node, said relay station operative to:

receive a coded/modulated digital communication from said first node;

compute a plurality of reliability values for a plurality of symbols in the received coded/modulated digital communication, where each reliability value indicates how likely the corresponding symbol is a binary 0 or a binary 1; and.

transmit a coded/modulated digital communication which corresponds to the received coded/modulated digital communication but also ~~that~~ has the computed reliability values embedded therein to said second node.

53. (Previously Presented) The relay station of Claim 52, further comprising a maximum a posteriori (MAP) filter that computes reliability values for code symbols based on a code structure of the received coded/modulated digital communication.

54. (Previously Presented) The relay station of Claim 52, further comprising a soft output channel decoder that computes reliability values for information symbols based on a code structure of the received coded/modulated digital communication.

55. (Previously Presented) The relay station of Claim 52, wherein the computed reliability values are explicitly embedded in the coded/modulated digital communication transmitted to said second node.

56. (Previously Presented) The relay station of Claim 52, wherein the computed reliability values are implicitly embedded in the coded/modulated digital communication transmitted to said second node.

57. (Previously Presented) The relay station of Claim 52, wherein said relay station is used in a wireless multi-hop network.

58. (Previously Presented) The relay station of Claim 52, wherein a link between said relay station and said first node has a smaller bandwidth than a link between said relay station and said second node.

59. (Previously Presented) The relay station of Claim 52, wherein each relay station is:

a base station;

a mobile station; or,

a stand alone relay station.

60. (Currently Amended) A method for enabling a relay station to provide reliable digital communications between a first node and a second node, said method comprising the steps of:

receiving, at said relay station, a digital communication from said first node;

computing, at said relay station, a plurality of reliability values for a plurality of symbols in the received digital communication, where each reliability value indicates how likely the corresponding symbol is a binary 0 or a binary 1; and,

transmitting, at said relay station, a digital communication which corresponds to the received digital communication but also ~~that~~ has the computed reliability values embedded therein to said second node.

61. (Previously Presented) The method of Claim 60, wherein said computing step if performed a maximum a posteriori (MAP) filter that computes reliability values for code symbols based on a code structure of the received digital communication.

62. (Previously Presented) The method of Claim 60, wherein said computing step if performed a soft output channel decoder that computes reliability

values for information symbols based on a code structure of the received digital communication.

63. (Previously Presented) The method of Claim 60, wherein the computed reliability values are explicitly embedded in the digital communication transmitted to said second node.

64. (Previously Presented) The method of Claim 60, wherein the computed reliability values are implicitly embedded in the digital communication transmitted to said second node.

65. (Previously Presented) A wireless relay based network, comprising:

a first node;

at least one relay station; and

a second node;

wherein said first node communicates with said second node via said at least one relay station, wherein each relay station is operative to:

receive a digital communication from said first node;

compute a plurality of reliability values for a plurality of symbols in the received digital communication; and,

transmit a digital communication that has the computed reliability values embedded therein to said second node, wherein when one relay station knows a channel response of a link between that relay station and said second node then that relay station is able to construct a transmitted digital communication which is coherently combined at said second node with a similar transmitted digital communication received from another relay station.